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Course 204: Programming Skills

Course Content

UNIT-1: Arrays, Structure & Union and User defined function in C programming Language:

1.1 Concepts of Two-Dimensional Numeric Array:

  1.1.1 Declaring Two-Dimensional numeric array

  1.1.2 Two-Dimensional numeric Array operations (Addition, Subtraction, Multiplication, Transpose)

  1.1.3 Element Address in array (Row major and Column major)

  1.1.4 Two-Dimensional Character Array:

   1.1.4.1 Declaring & Initializing Two-Dimensional character array

   1.1.4.2 Two-Dimensional character Array operations (Searching elements, copying, merging, finding length ofgiven string)

1.2 Concepts of structure and Union:

  1.2.1 Defining, declaring and Initializing structure and Union

  1.2.2 typedef and accessing structure member

  1.2.3 Difference between structure and union

1.3 User defined functions :

  1.3.1 Function return type, parameter list, local function variables

  1.3.2 Passing arguments to function

  1.3.3 Calling function from main() function or from other function.

  1.3.4 Function with No arguments and no return value, No arguments and a return value, with arguments and no return value, with arguments and a return value.

  1.3.5. Recursive Function

  UNIT-2 : Python Fundamentals:

2.1 Concepts of Interpreter based programming language:

  2.1.1 Structure of Python Programming language.

  2.1.2 Python code Indention and execution

2.2 Python Variables:

  2.2.1 Naming of variables and Dynamic declaration of variables

  2.2.2 Comments in Python

  2.2.3 Assigning values to multiple variables

  2.2.4 Global variables

2.3 Python Datatypes:

  2.3.1 Text (str), Numeric Type(int, float, complex), Boolean (bool)

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2.3.2 Setting Datatypes
2.3.3 Type conversion (int, float, complex), casting (int, float,str)
2.4 User defined function .
2.4.1 Defining function, Function with Parameters
2.4.2 Parameter with default value, Function with return value

UNIT-3 : Python Strings and Operators
3.1 Python Strings :
3.1.1 Multiline string, String as character array, triple quotes
3.1.2 Slicing string, negative indexing, string length, concatenation
3.1.3 String Methods:(center, count, join, len, max, min, replace, lower, upper, replace, split)
3.2 Operators :
3.2.1 Arithmetic Operators(+,-,*,/,%,**,//)
3.2.2 Assignment Operators(=,+=,-=,/=,*=,//=)
3.2.3 Comparison Operators (==, !=, >,<,>=,<=)
3.2.4 Logical Operators (and, or, not)
3.2.5 identity and member operators (is, is not, in, not in)

UNIT-4 : Python conditional and iterative statements :
4.1 if statement, if..elif statement, if..elif...else statements, nested if
4.2 Iterative statements :
4.2.1 while loop, nested while loop, break , continue statements.
4.2.2 for loop, range, break, continue, pass and Else with for loop, nested for loop.
4.3 List : creating list, indexing, accessing list members, range in list, List methods (append, clear, copy, count, index, insert, pop, remove,reverse, sort).

UNIT-5: Python Collections and Library :
5.1 Python Collections :
5.1.1 Tuples : Declaring tuple, indexing tuple, changing tuple values, adding and removing data from tuple, Use of tuple() method to create tuple, count() and index() methods.
5.1.2. Sets: declaring set, access set data,

set methods (add, clear, copy,discard, pop, remove, union, update).
5.1.3 Dictionary :
5.1.3.1 Creating Dictionary, Adding, Accessing and Removing element
5.1.3.2 Dictionary methods : get(), pop(), popitem(), clear(), copy()

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	5.2 Introduction to Numpy and Pandas : 　　**5.2.1** Overview of numpy 　　　　**5.2.1.1** Numpy methods (Mean, Median, Mode, 　　　　　　Standard Deviation and Variance) 　　　　**5.2.1.2** Implementation of Numpy methods on numeric dataset create 　　　　　　dusing list. 　　**5.2.2** Pandas Dataframe: 　　**5.2.2.1** Creating dataframe using list 　　**5.2.2.2** Creating dataframe using dict of equal length list 　　**5.2.2.3** Reading data using csv file (read_csv()) 　　**5.2.2.4** Retrieving rows and columns from dataframe using index 　　**5.2.2.5** Retrieving rows and columns using loc and iloc functions.

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